

April 26, 1985

TO: Non-Coal File

From: Thomas L. Portle, Reclamation Soils Specialist *see for*

RE: Field Inspection of Reclamation Test Plots Pursuant to  
Permitting of Brush Wellman, Topaz Mining Property,  
ACT/023/003, Juab County Utah.

On April 16, 1985 Susan Linner, Lynn Kunzler and Tom Portle of the Division visited the above-mentioned operation for the purpose of observing test plots to determine their success and ascertain the need for further test plots to assist in the drafting of a reclamation plan suitable to this rather harsh area.

Observations of Test Plots at Roadside Waste Dump and Blue Chalk Dump

The roadside dump test plot supported fairly good vegetation in its lower most portion (highest fertilizer treatment). This was the only surviving portion, the rest having been covered with waste. Species observed included Russian wildrye, crested wheatgrass, Indian ricegrass, alfalfa, and four-wing saltbush. The highest fertilizer treatment was represented by this lower portion of the slope. It was observed by Mr. Lee Davis that this had always appeared to be the most successful subplot. Whether this is due to the fertilization or to increased moisture in the lower portion of the slope or to a combination is not known. Since moisture is limiting it may be that it was a moisture difference or a combination. The test plots were established in 1977 according to Mr. Davis.

At the Blue Chalk dump the slopes showed better if somewhat spotty revegetation with crested wheatgrass and four-wing saltbush being the main species present. In areas where flat terrace like situations occurred on the slopes the revegetation appeared to be enhanced. The flats appeared to be performing poorly in terms of cover. It was interesting to note that the fertilizer effect was quite pronounced in this plot. The high fertilizer subplot (C) displayed the greatest success in terms of cover and vigor.

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It was of interest to observe that in this location the grey rhyolite was supporting by far greater vegetation cover than the clays which had been placed in the adjoining test plots. The vegetation invading the rhyolite was dominated by rabbitbrush with Indian ricegrass, bottlebrush squirrletail and shadscale in occurrence. It appeared that the broken up and coarser nature of this material allowed for greater moisture retention and infiltration than the hardened surfaces of the clay surfaced test plots. In addition, the presence of microhabitat for catching soil materials and seed may have been of consequence. Another consideration which may be pertinent to this area was the lighter color of the material which may have contributed to increased moisture availability due to cooler surface temperatures.

#### Conclusions and Recommendations:

The test plots have yielded valuable information. From results observed by the Division there appears to be no reason to believe the company will be able to qualify for an exemption to the revegetation standard pursuant to Rule M-10(12)(3).

While the test plots have been partially successful they have allowed for the determination that additional treatments are warranted to better assess the best and most economical revegetation techniques.

In light of this the following treatments are recommended to be implemented by the company in Fall of 1985:

Mixtures of the vegetation-supporting grey rhyolite and the clay materials should be tested, as follows:

1:1 Clay : Rhyolite  
1:2 Clay : Rhyolite  
1:3 Clay : Rhyolite  
rhyolite itself

This will allow for a more economic option when compared to the haulage of clay to cover the spoil (rhyolite) as has been done to date. In addition the lighter color, more roughened surface and better moisture retention (as discussed above) will be of advantage in establishing vegetation.

Fertilization has not been tested in the rhyolite and thus the most beneficial rate of fertilizer application needs to be determined.

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Irrigation should be included to determine its role in insuring establishment and early survival.

Terraces should be implemented on slopes as a test plot condition. Pitting should be tested to provide for moisture harvesting on the flat surfaces.

Species which have been successfully established in test plots at a nearby operation (Valley Asphalt's Lava Bench) may be tried in the current seed mix in place of species which were in the mix but were not found in the test plots. Such species include winterfat, globemallow, and shadscale and Indian ricegrass (doing well in adjacent areas at the Topaz mountain property).

cc Lynn Kunzler  
Susan Linner

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